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FAY KAPLUN & MARCIN, LLP
150 BROADWAY, SUITE 702
NEW YORK, NY 10038

| EXAMINER | |
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| PATEL, PUNAM | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/584,880 | MAY, LUTZ | |
| | Examiner | Art Unit | |
| | PUNAM PATEL | 2855 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *09/25/2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-7,9-17,20-45,47-50,52-59,64 and 65* is/are pending in the application.

4a) Of the above claim(s) *58,59,64 and 65* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-7,9-17,20-45,47-50 and 52-57* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 June 2006* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/27/2006*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Election/Restrictions*

Applicant's election of Invention I in the reply filed on 09/25/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election **without** traverse (MPEP § 818.03(a)). Claims 58, 59, 64, and 65 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected inventions, there being no allowable generic or linking claim.

### *Specification*

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Magnetic Principle Based Torque Sensor.

### *Double Patenting I*

Claims 1-7, 9-17, 20-23, 25-29, 34-36, 38-45, 47-50, and 52-57 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-7, 9-17, 20-33, 35-38, and 40-45 of **U.S. Patent No. 7,243,557**. Although the conflicting claims are not identical, they are not patentably distinct from each other.

With respect to Claim 1, US 7,243,557 teaches applying a first current pulse to a sensor element of a torque sensor, the first current pulse is applied such that there is a first current flow in a first direction along a longitudinal axis of the sensor element; and the current being applied such that a magnetically encoded region is generated in the sensor element (see Claim 1).

Claims 2-23 are taught by claims 2-23 of US 7,243,557, respectively.

Claims 25-28 are taught by claims 24-27 of US 7,243,557, respectively.

With respect to Claim 29, US 7,243,557 teaches a first sensor element having a surface, wherein in a direction essentially perpendicular to the surface of the first sensor element, the magnetically encoded region of the first sensor element has a magnetic field structure such that there is a first magnetic flow in a first direction and a second magnetic flow in a second direction (see Claim 1), wherein the first direction is opposite to the second direction (see Claim 4).

Claims 34 and 35 are taught by claims 20 and 21 of US 7,243,557, respectively.

Claim 36 is taught by claim 24 of US 7,243,557.

Claim 38 is taught by claim 7 of US 7,243,557.

With respect to Claim 39, US 7,243,557 teaches applying a first current pulse to a sensor element; wherein the first pulse is applied such that there is a first current flow in a first direction along a longitudinal axis of the sensor element; and wherein the first current pulse is such that the application of the current pulse generates a magnetically encoded region in the sensor element (Claim 28).

Claims 40-42 are taught by claims 29-31 of US 7,243,557, respectively.

Claim 43 is taught by claims 33 and 28 of US 7,243,557.

Claim 44 is taught by claim 32 of US 7,243,557.

Claim 45 is taught by claim 33 of US 7,243,557.

Claims 47-50 are taught by claims 35-38 of US 7,243,557, respectively.

Claims 52-57 are taught by claims 40-46 of US 7,243,557, respectively.

***Double Patenting II***

Claims 1-6, 29, 30, and 38-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 34 and 52-57 of copending **Application No. 11/573,079**. Although the conflicting claims are not identical, they are not patentably distinct from each other.

With respect to Claim 1, 11/573,079 teaches applying a first current pulse to a sensor element of a torque sensor, the first current pulse is applied such that there is a first current flow in a first direction along a longitudinal axis of the sensor element; and the current being applied such that a magnetically encoded region is generated in the sensor element (see Claim 52, wherein the magnetizable element is read as the sensor element).

Claims 2-6 are taught by claims 53-57 of 11/573,079, respectively.

With respect to Claims 29 and 30, 11/573,079 teaches a first sensor element having a surface, wherein in a direction essentially perpendicular to the surface of the first sensor element, the magnetically encoded region of the first sensor element has a magnetic field structure such

that there is a first magnetic flow in a first direction and a second magnetic flow in a second direction (see Claim 34, wherein the magnetizable element is read as the sensor element), wherein the first direction is opposite to the second direction (see Claim 55); and a second sensor element with at least one magnetic field detector (see Claim 34).

Claim 38 is taught by claim 45 of 11/573,079.

With respect to Claim 39, 11/573,079 teaches applying a first current pulse to a sensor element; wherein the first pulse is applied such that there is a first current flow in a first direction along a longitudinal axis of the sensor element; and wherein the first current pulse is such that the application of the current pulse generates a magnetically encoded region in the sensor element (Claim 52, wherein the magnetizable element is read as the sensor element).

Claims 40-44 are taught by claims 53-57 of 11/573,079, respectively.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 48 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 48 recites the limitation "the second pulse" in line 2. There is insufficient antecedent basis for this limitation in the claim. The claims upon which claim 48 depends fail to recite a second pulse being applied. Is the first pulse repeated or is there a second pulse that varies somehow from the first pulse?

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

**Claims 1-22, 24, 36-35, 37, and 38 are rejected under 35 U.S.C. 102(b) as being May et al. (WO 99/56099).**

With respect to Claims 1, 5, 7, 20, 21, 22, and 26, May et al. disclose a torque sensor comprising the following structural elements:

a steel and nickel shaft (Fig. 5b, #10 & pg. 14, lines 3-7) with a magnetically encoded region/variation (#20, wherein the region does not extend to the end faces of the shaft);

a core region extending inside the shaft along its longitudinal axis such that the core region surrounds a center of the shaft (Fig. 5b, wherein the shaft has a core);

a circumferential surface surrounding the core region and the outside surface of the shaft (#20, wherein the magnetically encoded region is read as the circumferential surface on the outside of the shaft that surrounds the core);

a first and second circumferential regions/pinning zones at the outside of the shaft (Fig. 5b, the two outer surface areas on the right and left side of the encoded region, #20, are read as the circumferential regions/pinning zones); and

a first and second electrode (#62) located at a first and second location on the shaft, respectively. Also see Figs 12a-b & Abstract.

With respect to Claims 24, 29, 31, 34, 35, 37, and 38, May et al. disclose the encoded region of the shaft having a magnetic field structure such that there is a first magnetic flow in a first direction (#21a) and a second magnetic flow (#21b) in a second direction, wherein the two directions are opposed. See pg. 23, lines 11-13

With respect to Claim 30, May et al. disclose a second sensor element with at least one magnetic field detector (Abstract & Figs. 12a-b).

With respect to Claims 1, 3, 4, 6, 9-17, 27, 28, 32, and 33, **MPEP 2113 [R-1]** states that "[t]he patentability of a product does not depend on its method of production." Thus, the claims are not limited to the manipulations of the recited steps, only the structure implied by the steps (see Claims 1, 5, and 24, wherein the structure implied by the steps was given patentable weight).

With respect to Claim 39, May et al. disclose a method of forming a torque sensor comprising the steps of:

applying a first current pulse to a shaft (Fig. 5b, #60) such that there is a first current flow in a first direction along a longitudinal axis of the shaft (Fig. 5b, see arrow of current direction) and a magnetically encoded region (#20) is formed. See pg. 17.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 40 and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over May et al. (WO 99/56099).**

With respect to Claim 40, although May et al. does not elaborate on the number of current pulses, it would have been obvious to one of ordinary skill in the art at the time of the

invention to modify the method of May et al. to provide for a plurality of pulses in order to enhance the magnetization in various directions, and therefore provide more accurate results.

With respect to Claims 47 and 48, although May et al. does not explicitly disclose the range of the current pulse amps, it would have been obvious to one of ordinary skill in the art at the time of the invention to select the maximum amp to be in a range between 40-1400, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PUNAM PATEL whose telephone number is (571)272-6794. The examiner can normally be reached on Monday to Friday 9:30 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harshad Patel/
Primary Examiner, Art Unit 2855

PP
10/01/2008